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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,433	02/12/2002	Yanbin Shao	13854-009001	8735

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EXAMINER

JUBA JR, JOHN

ART UNIT PAPER NUMBER

2872

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/075,433

Applicant(s)

SHAO, YANBIN

Examiner

John Juba, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 6, 8, 12-14 and 18-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 6, 8, 12, 13, 18, 19 and 21 is/are rejected.
- 7) ☒ Claim(s) 2, 5, 14 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 16, 2004 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 6, 8, 12, 13, 18, 19, and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Li (U.S. Patent number 6,487,014). Referring *for example* to Figure 13A and the associated text, Li discloses a circulator (of claim 1) comprising
a first input port (P1) operable to receive light including light of a first and a second component having a first (p) and a second (s) polarization, respectively;

a polarization beam splitter (130) optically coupled to the first input port (P1) and operable to reflect the first component of light of the first polarization (p) and pass the second component of light of the second polarization (s);

a reflector (138) optically coupled to the polarization beam splitter;

a non-reciprocal device (134) optically coupled to the reflector and *operable* [when the magnetic field is reversed; Col. 13, lines 35 – 45] to convert the first component of light of the first polarization (p) into light of the second polarization (s);

a first output port (P4) *operable* [when the field is reversed] to receive light of the second polarization (s) from the non-reciprocal device (134); and

a second output port (P2) *operable* (i.e., when the field is not reversed) to receive the second component of light of the second polarization from the polarization beam splitter [via rotator 136].

With regard to claim 3, a polarizer (132) is coupled to the non-reciprocal rotator (134).

With regard to claims 8, 12, and 13, Li discloses a method of operating a switch for transmitting light among a first input port (P1), a first output port (P4), and a second output port (P2), the light having either a first (p) or a second (s) polarization, the method comprising

transmitting a light signal including first and a second component having a first (p) and second (s) polarization, respectively, from the first input port (P1) with the first polarization (p) onto a polarization beam splitter (130);

directing (reflecting) the first component onto a first reflector (138);

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reflecting the first component of light onto a first non-reciprocal device (134);
[reversing the magnetic field from the direction shown Col. 13, lines 35 – 45];
changing the polarization of the first component of light from the first (p) polarization to the second polarization [with the field thus reversed];
directing the first component into a first output port (P4) [with the field thus reversed];
directing the second component of light (s) onto a second non-reciprocal device (136) [by transmission through splitter (130)];
[returning the magnetic field to its original (illustrated) orientation];
maintaining the polarization of the second component of light as it passes through the second non-reciprocal device (136) [with the field as shown]; and
directing the second (s) component of light into the second output port (P2) [with the field as shown].

With regard to claims 12 and 13, the first component is directed to the first output port (P4) through a polarizer (132) when the field is reversed, whereas the second component is directed into the second output port (P2) via polarizer (132) when the field is *not* reversed.

With regard to claims 18, 19, and 21, the circulator of Li (e.g., Fig. 13B) may be regarded as comprising

first (P4) and second (P2) input ports, the first and second input ports each being operable to receive a first light signal of a first polarization (s; in addition to p-polarized

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light) and the second port being operable to receive a second light signal of the first polarization (s; in addition to p-polarized light);

a first reflector (138) optically coupled to the first input port (P4) [via splitter (132) and rotator (134)];

a non-reciprocal device (136) optically coupled to the second input port (P2) [via splitter (132) and mirror (139)] and *operable* to convert the second signal light of the first polarization (s) [from the second input port (P2)] into a second signal light of a second polarization (p) [traveling toward (P3)];

a polarization beam splitter (130) optically coupled to the first reflector (138) and to the non-reciprocal device (136), and operable to pass light of the first polarization (s) [to port (P1) from port (P4) where it originated as p-polarized light] and reflect light of the second polarization (p) [to port (P1) from port (P4), where it originated as s-polarized light];

a second reflector (139) optically coupled to the polarization beam splitter (130) [via rotator (136)]; and

an output port (P3) optically coupled to the second reflector (139) and *operable* [when the field is reversed] to receive the first light signal of the first polarization (s) [from port (P4)] and *operable* [when the field is not reversed] to receive the second light signal of the second polarization (p) [from port (P2) where it originated as s-polarized light].

With regard to claim 19, the circulator further comprises a polarizer (132) optically coupled to the non-reciprocal (136) [via mirror (139)].

Allowable Subject Matter

Claims 2, 5, 14, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter:

The prior art, taken alone or in combination, fails to teach or to fairly suggest an isolator optically coupled to the polarization beam splitter in the combination of claim 2;

an optical isolator coupled to the reflector in the combination of claim 5;

the method wherein the first and second components of light are sent onto a polarization beam splitter *through an isolator*, as recited in the method of claim 14; or

an isolator coupled to the second reflector in the combination of claim 20.

Response to Amendment

Applicant's amendment is sufficient in overcoming the rejection of claims 8 and 12 – 14 under 35 U.S.C. §112, second paragraph set forth in the last Office action (December 12, 2003).

Applicant's amendment of claim 18 is sufficient in overcoming the rejection of claims 18 – 21 35 U.S.C. §102(b) as being anticipated by Fukushima (U.S. Patent number 5,999,313). Fukushima does not disclose an output port operable to receive both the first light signal of the first polarization and the second light signal of the second polarization, as now defined.

Applicant's remarks concerning the teachings of Li have been fully considered, but are found unpersuasive. Applicant indicates that claim 1 requires that light received at a first input port subsequently results in components of the light being received at both the first and second output ports. However, nothing in the claims requires this to happen simultaneously. Rather, the claims recite that the device is "operable" in a particular manner. Li discloses that the field of the Faraday rotators may be provided by an electromagnet so as to be reversible (Col. 13, lines 35 - 45). For the given wave plates, operation is such that, upon reversal of the magnetic field, the sense of logical circulation switches from $(1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 1)$ to $(4 \rightarrow 3 \rightarrow 2 \rightarrow 1 \rightarrow 4)$. Thus, as set forth in the rejection above, the apparatus is "operable" in the recited manner.

Similarly with regard to claim 8, Applicant relies upon Li as disclosing an apparatus wherein "all of the light transmitted from a first input port is directed to a single port". However, as set forth in the rejection, the apparatus is "operable" to direct light to multiple ports.

Conclusion


This is an RCE of applicant's earlier Application No. 10/075,433. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Juba whose telephone number is (571) 272-2314. The examiner can normally be reached on Mon.-Fri. 9 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Drew Dunn can be reached on Mon.- Thu., 9 - 5.

The centralized fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for *all* communications.


JOHN JUBA, JR.
PRIMARY EXAMINER
Art Unit 2872

April 16, 2004